UNIVERSITA' DI MESSINA
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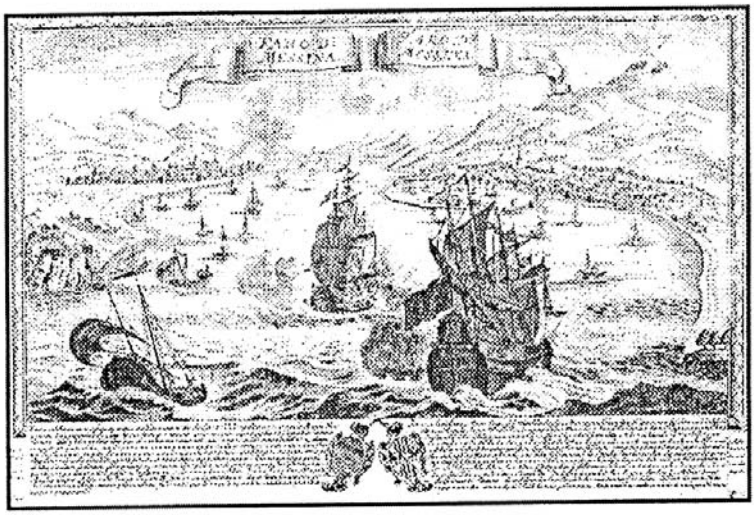
Atti Accademia Peloritana dei Pericolanti
Classe I di Scienze Fisiche
Matematiche e Naturali

WORKSHOP ON PLATINUM CHEMISTRY

ABSTRACTS



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CYCLOADDITION AND COUPLING REACTIONS OF PLATINUM-COORDINATED LIGANDS. STOICHIOMETRIC AND CATALYTIC SYNTHESES OF HETEROCYCLES AND CYCLOPROPANES

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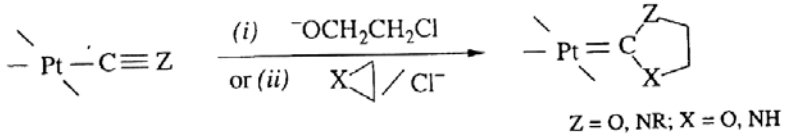
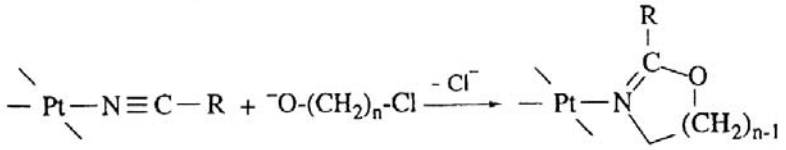
$Pt(II)$-coordinated isocyanide and carbonyl ligands can be converted to 5- or 6-membered heterocyclic carbenes by reactions with a new class of organic nucleophiles such as haloalcohols, haloamines and the three-membered heterocycles $\overline{XCH_2C}\,H_2$ $(X = NH, O,$:



Z = O, NR; X = O, NH

Electrophilic cleavage of $C - F$ bonds in $Pt(II) - CF_3$ complexes in the presence of diprotic O- and S-nucleophiles gives a series of dioxy- and dithio-carbenes.

$Pt(II)$-nitrile ligands give cycloaddition reactions with $^{-}O(CH_2)_nCl$ $(n = 2, 3)$ or $\overline{OCH_2C}\,H_2/Cl^{-}$ to yield 2-oxazolines and 1,3-oxazines:



n = 2, 3

A series of free oxazolines is obtained stoichiometrically using cationic $Pt(II)$ nitrile compounds; attempts to carry out these reactions under catalytic conditions are reported.

Highly reactive $Pt(0)$ carbene intermediates are involved in the reaction of $[(PPh_3)_2Pt(C_2H_4)]$ with $N_2CHCOOEt$, which affords, as the only isolated product, $[(PPh_3)_2Pt(trans - EtOOCCH = CHCOOEt)]$. By performing this reaction in the presence of styrene, the catalytic cyclopropanation of the olefin occurs. A mechanism based on the intermediacy of a $Pt(0)$-carbene is proposed on the basis of a $FAB - MS$ study.

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